

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
aQH76
.R65
1994



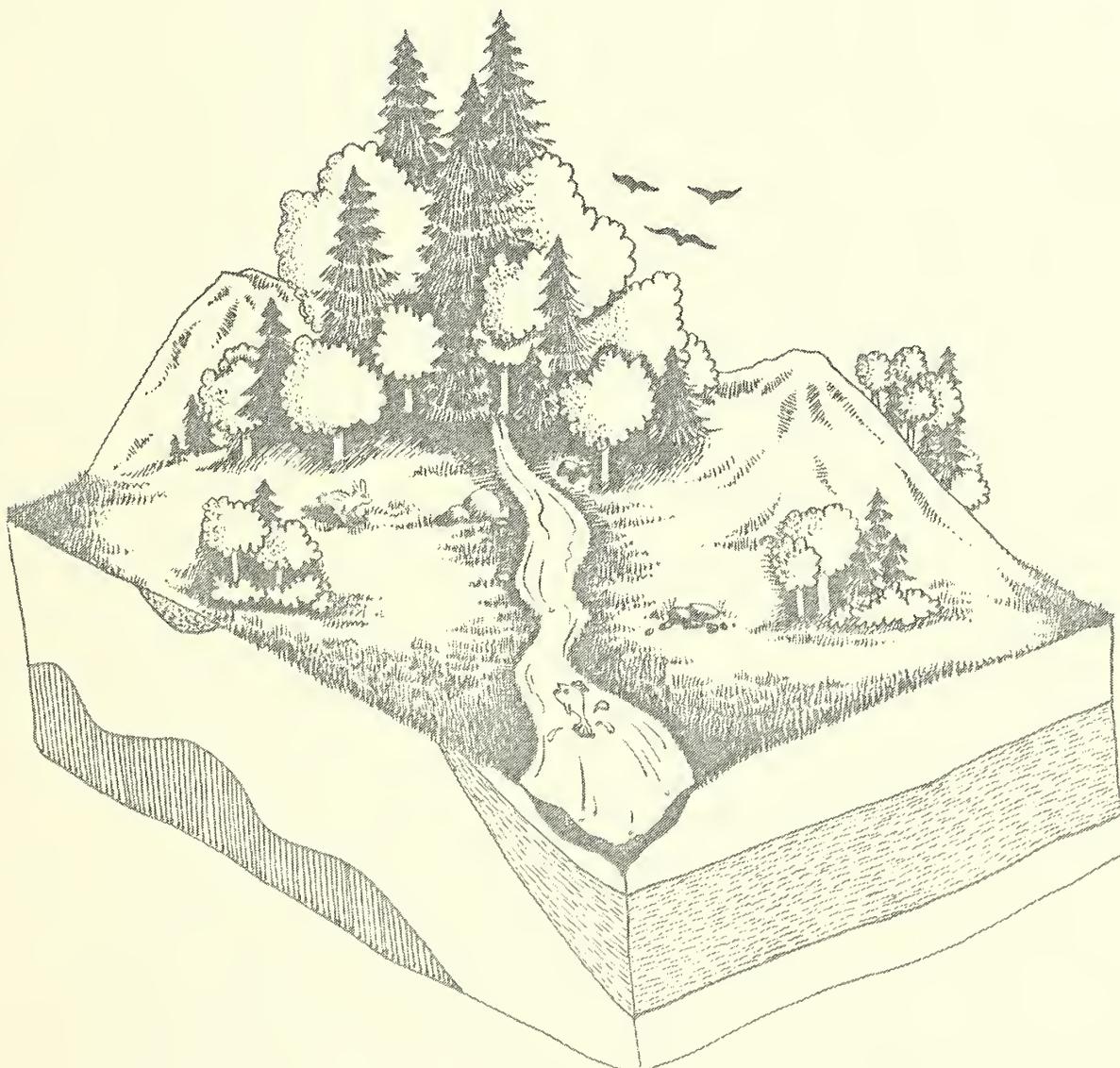
United States
Department of
Agriculture

Forest Service

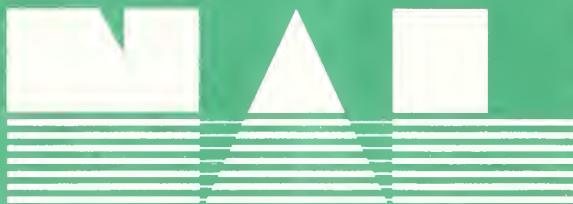
Northeastern
Area



The Role of the Northeastern Area in Ecosystem Management



**United States
Department of
Agriculture**



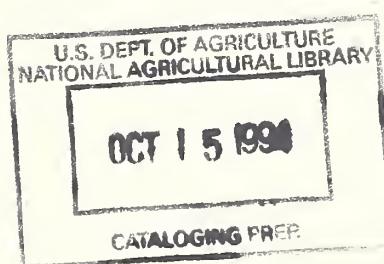
National Agricultural Library

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

The Role of the Northeastern Area in Ecosystem Management

State and Private Forestry





The Role of the Northeastern Area in Ecosystem Management

Introduction

The purpose of this document is to outline the role of the Northeastern Area, State and Private Forestry in planning and implementing ecosystem management through cooperative efforts in 20 States and the District of Columbia. This role is described in the presentation of four implementation measures and associated actions.

It was developed in consultation with the Northeastern Area Association of State Foresters and is a guide for cooperation among the Forest Service, State forestry agencies, other State and Federal agencies, Indian nations, the academic community, professional associations, forest industry, environmental groups, nonindustrial private forest landowners, and others in the use of an ecological approach to forest management.

A glossary and description of ecological units are included in the Appendix to build a common understanding of terminology and a framework for organizing information.

Background

In the Northeastern Area many people care about the condition of the environment, including forest health and biological diversity. Also, people demand a full range of forest commodities and amenities to meet human needs. Resource professionals can address these concerns and needs through a holistic, ecological approach to resource management. This is referred to as **ecosystem management**.

An ecosystem is a biological community interacting within a physical environment. People are an integral part of ecosystems. Human actions can significantly affect the physical environment that sustains an ecosystem and the biological community it supports. Ecosystem management responds to social, physical, economic and biological needs within the context of an ecological unit. **The goal of ecosystem management is to maintain the intrinsic productivity of physical environments and the diversity of the biological communities they support.**

Ecosystem management joins the principles of landscape ecology, biological diversity, natural resource sustainability, and biological productivity in the development of management alternatives. The successful implementation of ecosystem management relies upon the concepts of land stewardship, partnerships to achieve mutual goals, local participation in decisions and activities, and use of the best science and technology available.

The Northeastern Area and State forestry agencies have long worked in partnership to promote the use of scientific information for decision making and responsible stewardship of the land and its resources. As conservation leaders in providing this advice to people and demonstrating forest management techniques, we have an important role in communicating the meaning of ecosystem management and providing assistance to clients.

Implementation Measures

Awareness and Education

Federal and State personnel need to be aware of and understand the concepts of ecosystem management and their role in using this approach in order to provide clear direction and consistent messages to their colleagues and clients.

Knowledgeable resource professionals are the key to delivering ecologically based assistance. They must become knowledgeable of ecological concepts and how they affect land management practices to provide guidance to private land owners.

The Northeastern Area will support education in both the theory and application of ecological concepts. Training is emphasized early to ensure that resource professionals have a common understanding of ecological concepts and how they relate to current management practices. Training will be conducted in a manner that integrates disciplines and enables specialists to see the broader implications of ecological concepts.

The improvement of awareness and education will be accomplished by:

- Identifying educational needs and opportunities, and developing and implementing educational programs on ecosystem management in cooperation with our partners.
- Developing and sponsoring workshops, seminars, and conferences on ecological issues and concepts in cooperation with State Foresters, National Forest System, Forest Service Research and other organizations.
- Developing demonstration projects to encourage the voluntary cooperation across ownerships and to showcase complementary ecosystem strategies and management objectives.
- Identifying and sharing examples of ecosystem management among Federal agencies, States, and private land owners.
- Assisting cooperators in the development of educational programs and materials for industrial and non-industrial private forest landowners, developers, county planners, and others.
- Working with Forest Service and other researchers to place research results into practical application.
- Providing information and highlighting the results of ecosystem management through existing communication networks.
- Developing a slide program to explain ecological concepts and ecosystem management.

Ecological Information and Mapping

Ecological classifications are frameworks for organizing information about the environment in a way that is useful for studying ecosystems and for understanding the potential effects of land management decisions. Ecological classifications provide a means to communicate the scientific basis of ecosystem management.

The Forest Service adopted a **National Hierarchical Framework of Ecological Units** for use in managing National Forests and Grasslands. This framework systematically divides the country into progressively smaller areas of land and water having similar physical (climate, geomorphic processes, geology, soil, hydrology) and biological (plants, animals, microorganisms, potential natural communities) characteristics and ecological processes. These areas are also evaluated for the means in which they influenced and are influenced by human activities (social, cultural, economic).

The National Hierarchy will be used to frame the collection, analysis, and dissemination of forest inventory, health, and management information and for monitoring trends in resource use, environmental health, and response to management. The multiple levels shown in Table 1 of the Appendix describe an ecological framework for planning and decision making. The delineation of units at each level provide a framework to organize and prioritize activities at the next lowest level and to evaluate the social, economic, and environmental effects of decisions at the next highest level.

Many Federal, state and non-government agencies are also collecting, evaluating and interpreting environmental information using a variety of methods. The hierarchical framework is a means to share information and coordinate their activities across agency and political boundaries. Current efforts to map, inventory and interpret individual ecosystem components or which integrate environmental factors using different criteria or different scales include the National Cooperative Soil Survey system, The Nature Conservancy Community Classification System, U.S.G.S. Geological and Water Surveys, Habitat Type Systems, Environmental Protection Agency Ecoregions, and the U.S. Fish and Wildlife Service wetland classification.

The Forest Service has initiated and is coordinating mapping of ecological units within the Framework at the Domain, Division, Province, Section and Subsection levels. It is the State prerogative to initiate the development of maps and information at the Land Type Association, Ecological Land Type, and Ecological Land Type Phase levels shown in Table 1. The Northeastern Area will support and assist with these efforts.

The Northeastern Area will support ecological information and mapping efforts by:

- Developing a common understanding of ecological classification concepts and standard terminology.
- Delineating and updating Domain, Division, and Province boundaries in accordance with national criteria and in conjunction with National and Regional teams.
- Delineating Section and Subsection boundaries through activities of four subregional work groups that include participation of State agencies. The four sub-Area groups include the New England States and New York, the Mid-Atlantic States, the Central States and the Lake States.
- Supporting initiatives to develop ecological units at the Land Type Association, Ecological Land Type, and Ecological Land Type Phase levels consistent with the criteria in the National Hierarchical Framework.
- Establishing links between existing classification systems and the National Hierarchical Framework.
- Cooperating in efforts to validate ecological units and develop interpretations for management.
- Providing regional and local groups access to ecological unit maps and descriptions down to the Subsection level, and information on how to access maps below this level.
- Facilitating use of the National Hierarchy to integrate information from the ecological unit maps with other environmental, social, and economic information.

Partnerships and Cooperation

A holistic, landscape view of natural resources is fundamental in working with ecosystems. Ecosystems exist without regard to property and jurisdictional boundaries. To manage ecosystems in mixed ownerships, voluntary cooperation and cross-boundary coordination are often needed to manage ecosystems. Resource professionals must be sensitive to individual and local needs while looking beyond ownership boundaries to determine the ecological significance of lands and appropriate management options. This need for landscape-scale coordination makes the development of voluntary partnerships extremely important.

Partnerships provide opportunities to learn together, reach creative solutions, achieve mutual goals, and resolve resource conflicts. This can save time and money, avoid duplication of effort and produce complementary results.

An ecological perspective in the planning process views the general landscape as a mosaic of dynamic ecosystems. Ecosystems, not individual species are emphasized. The types and distribution of ecosystems and their relationship to the landscape characteristics that support them is the basis of the planning process. Planning options are tied to ecological inventories and the dynamic biological processes of each ecosystem.

The Northeastern Area fosters cooperative planning and management among public, industry, and private landowners, across political, agency and administrative boundaries, and among individuals and groups with diverse interests. This role will be fulfilled by:

- Identifying key players and organizations and encouraging the formation of partnerships.
- Establishing or strengthening networks among partners to communicate and share ideas, results and technical expertise.
- Supporting and participating in public and private initiatives that further the application of ecological concepts.
- Incorporating ecosystem concepts in plan development and implementation.
- Providing technical assistance in applying ecological concepts under existing planning authorities.
- Promoting the use of ecological unit information to provide individual landowners with a landscape perspective when preparing management plans.

Monitoring and Evaluation

The monitoring and evaluation of forest ecosystems is a complex and diverse activity. Ecosystems function on a scale and scope defined by natural processes and interrelationships that commonly cross ownership boundaries. Monitoring forest ecosystems to identify their condition and changes over time, provides a factual basis for evaluating the effects of management practices and land use decisions.

Currently the Forest Service, State Forestry Agencies, and other organizations collect data on forest resources and forest pests in many ways. These include State Natural Heritage surveys, Department of Interior GAP analysis, periodic Forest Inventory and Analysis (FIA) surveys, and the annual Forest Health Monitoring (FHM) survey.

Historically, forest monitoring has been tied more to goods and services produced than to ecosystem function and sustainability. These monitoring programs have focused on parts of ecosystems (i.e. individual indicator species) and have not provided data that would allow an analysis of ecosystem productivity and sustainability.

Few of the monitoring programs evaluate the conditions of ecosystems and how management objectives and practices affect ecosystem function. These resource management objectives can include the production of both commodity and non-commodity goods and services such as recreation, wildlife, timber, wilderness and water. Evaluations of these effects are complicated by the lack of standardized data collection, and future evaluations of ecological effects will be impossible unless practical and meaningful indicators of ecosystem health are developed.

The efforts needed to improve the monitoring and evaluation of ecosystems include:

- Establishing funding sources and long-term support for forest ecosystem monitoring and evaluation.
- Developing and implementing a data collection and reporting system for ecosystem health monitoring using ecological units coordinated with the national hierarchical framework.
- Developing indicators and monitoring techniques to evaluate the condition of forest ecosystems.
- Coordinating monitoring and evaluation projects with cooperators to address ecosystem health issues.
- Using geographic reference measures to integrate natural resource inventories and their interpretation at a landscape or ecological unit scale.

Glossary

The following definitions were developed by the Forest Service to promote the use of consistent ecosystem terminology.

Biological Diversity

The variety of life and its processes, including the variety in genes, species, ecosystems, and ecological processes that connect everything in ecosystems.

Ecological Approach

Natural resource planning and management activities that assure consideration of the relationship between all organisms (including humans) and their environment.

Ecological Classification

A multifactor approach to categorizing and delineating, at different levels of resolution, areas of land and water having similar characteristic combinations of the physical environment (such as climate, geomorphic processes, geology, soil, and hydrologic function), biological communities (such as plants, animals, microorganisms, and potential natural communities), and the human dimension (such as social, economic, cultural, and infrastructure).

Ecological Process

The actions or events that link organisms (including humans) and their environment, such as disturbance, successional development, nutrient cycling, carbon sequestration, productivity, and decay.

Ecoregion

A continuous geographic area over which the macroclimate is sufficiently uniform to permit development of similar ecosystems on sites with similar properties. Ecoregions contain multiple landscapes with different spatial patterns of ecosystems.

Healthy Ecosystem

An ecosystem in which structure and functions allow the maintenance of biological diversity, biotic integrity, and ecological processes over time.

Human Dimension

An integral component of Ecosystem Management that recognizes people are part of ecosystems, that people's pursuits of past, present, and future desires, needs and values (including perceptions, beliefs, attitudes and behaviors) have and will continue to influence ecosystems and that ecosystem management must include consideration of the physical, emotional, mental, spiritual, social, cultural and economic well-being of people and communities.

Landscape

An area composed of interacting ecosystems that are repeated because of geology, land form, soils, climate, biota and human influences throughout the area. Landscapes are generally of a size, shape and pattern which is determined by interacting ecosystems.

Landscape Ecology

A study of the structure, function, and change in a heterogeneous land area composed of interacting ecosystems.

Monitoring

The collection and use of accurate high quality information to document change in forest condition over time and identify possible causes for the observed changes.

Productive

The ability of an area to provide goods and services and to sustain ecological values.

Scale

The degree of resolution at which ecological processes, structures, and changes across space and time are observed and measured.

Stewardship

Caring for land and associated resources and passing healthy ecosystems to future generations.

Sustainability

The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

Appendix

Table 1. *National Hierarchical Framework
Ecological Units for Ecosystem Classification*

Reference Levels	Map Scales	Climate	Geology & Topography	Soil	Potential Vegetation
Domain	1:30 million	Climatic zones and types, precipitation, and temperature	Latitude and Continental Landmasses	Broad areas of similar climatic influence on soil formation	Broad areas of similar climatic influence on vegetative forms
Division	to				
Province	1:5 million				
Section	1:7.5 million to	Precipitation and temperature	Geomorphic province, and surficial geology	Phases of soil orders, subgroups, or great groups	Formation or Series
Subsection	1:250,000				
Landtype Association	1:250,000 to	Precipitation and temperature	Elevation, landform and geologic formation	Phases of soil subgroups, families or series	Series, or plant associations
Landtype	1:24,000				
Landtype Phase	1:24,000 to	Soil temperature and moisture	Landform, slope position and aspect	Phases of soil families or series	Plant associations or phases
Site	1:7,500				

Ecosystem Strategy Team, Northeastern Area

State and Private Forestry

The Ecosystem Strategy Team has been charged with providing guidance and recommendations to the Area Director and the Northeastern Area's Leadership Team for implementation of ecosystem management through State and Private Forestry programs and activities.

Team members are:

Marcus Phelps	Team Leader	Radnor, PA
Robert Bathrick	State Forester	Albany, NY
Marvin Brown	State Forester	Jefferson City, MO
Connie Carpenter	Hydrologist	Durham, NH
John Currier	Asst. Dir. - FRM	Radnor, PA
Frank Koenig	R9 Liasion	Morgantown, WV
Craig Locey	Forester	St.Paul, MN
Russell McKinney	FHP Liasion	Milwaukee, WI
Robert Neville	Urban Forester	Durham, NH
Olin Phillips	Asst. State Forester	St.Paul, MN
Paul Sever	Fire Coordinator	Radnor, PA
Karen Sykes	Watershed Specialist	Morgantown, WV
Olin White	State Forester	Trenton, NJ



by

NATIONAL AGRICULTURAL LIBRARY



1022445433